

**Amendment and Response**

Applicant: Daniel Lyle Callahan et al.

Serial No.: 10/615,011

Filed: July 8, 2003

Docket No.: 200308561-1/H300.210.101

Title: FORCE DISTRIBUTING SPRING ELEMENT

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**REMARKS**

The following remarks are made in response to the Office Action mailed December 22, 2005. In the Office Action, claims 3-7, 10-17, and 19 were rejected and claims 8, 9, and 18 have been objected to. Claims 1-2 were previously cancelled. With this Response, claims 3, 11-13, 15-16, and 18 have been amended and new claims 20-22 are added. Claims 3-22 are pending in the application and are presented for reconsideration and allowance.

**Claim Objections**

In the Office Action, claims 1, 12, and 15 were objected to regarding antecedent basis. Claim 1 was rejected regarding the term "each of module". Applicants will treat this objection as directed to claim 3, as claim 1 was canceled in the last Response filed October 11, 2005. Applicants have amended claims 3, 12, and 15 as suggested to alleviate the objections to those claims. Accordingly, Applicants respectfully request withdrawal of those objections.

**Claim Rejections under 35 U.S.C. § 102**

In the Office Action, claims 11-12 were rejected under 35 U.S.C. 102(b) as being anticipated by Beaman et al. U.S. Patent 5,738,531 (herein the Beaman Patent).

Applicants' amended independent claim 11 claims a force distributing mechanism.

As admitted in the Office Action (regarding claims 3 and 16), the Beaman Patent fails to disclose a spring member being curved and in pressing contact against the second side of the printed circuit board adjacent a center of the printed circuit board.

Accordingly, the Beaman Patent fails to disclose a means for maintaining and distributing a contact force substantially uniformly across a contact array of a land grid array module and a contact array of a printed circuit board, wherein in an assembled state of the land grid array module and the printed circuit board, the means for maintaining and distributing the contact force is in direct contact with the printed circuit board adjacent a center portion of the printed circuit board relative to the land grid array module, as recited in Applicant's amended independent claim 11.

In addition, the Beaman Patent fails to disclose that the means for maintaining and distributing the contact force is spaced from the printed circuit board at an adjacent outer

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portion of the printed circuit board relative to the land grid array module (in the assembled state of the land grid array module and the printed circuit board), as recited in Applicants amended independent claim 11.

For these reasons, the Beaman Patent fails to teach or suggest amended independent claim 11, and therefore Applicant's amended independent claim 11 is patentable and allowable over the Beaman Patent. In addition, dependent claim 12 is also believed to be allowable as it further defines patentably distinct independent claim 11.

In light of the above, Applicants respectfully request withdrawal of the rejection of claims 11-12 based on the Beaman Patent under 35 U.S.C. §102 and respectfully requests allowance of these claims.

**Claim Rejections under 35 U.S.C. § 103**

In the Office Action, claims 3-4, 7, 10, 13, 16, 19 were rejected under 35 U.S.C. 103(a) as being unpatentable over the Beaman Patent in view of Bonnefoy U.S. Patent 4,611,869 (herein the Bonnefoy Patent).

Applicants' amended independent claim 3 claims an electronic component system.

As admitted in the Office Action (regarding claims 3 and 16), the Beaman Patent fails to disclose a spring member being curved and in pressing contact against the second side of the printed circuit board adjacent a center of the printed circuit board.

In addition, the Beaman Patent fails to disclose a first portion of the spring member being in secured contact with the backing plate and spaced from the second side of the printed circuit board in an assembled state of the system, as recited in Applicant's amended independent claim 3.

The Bonnefoy Patent fails to cure these deficiencies of the Beaman Patent regarding Applicants amended independent claim 3. The Bonnefoy Patent discloses clip 22 and clip 23 which are in a cambered form (see Figures 4-5) prior to formation of the clamped state shown in Figure 3 (see the Bonnefoy Patent at Figures 4-5, and Column 4, lines 8-62). As shown in Figure 3, in the clamped state, substantially all, or all, of the clip 22 is in contact against element 29 and/or substantially all or all of clip 23 is in contact against element 20. Accordingly, the Bonnefoy Patent does not disclose a first portion of the spring member

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being in secured contact with the backing plate and spaced from the second side of the printed circuit board in an assembled state of the system, as recited in Applicant's amended independent claim 3.

Accordingly, one cannot combine the Beaman Patent and the Bonnefoy Patent and arrive at Applicants amended independent claim 3.

Indeed, the Bonnefoy Patent fails to disclose a backing plate at all. The Bonnefoy Patent also fails to indicate how one would employ the clip 22, 23 in cooperation with a backing plate. Moreover, the Beaman Patent fails to disclose a suggestion or motivation to modify its assembly to include a spring member.

For these reasons, the Beaman Patent and the Bonnefoy Patent, alone or in combination, fail to teach or suggest Applicants' amended independent claim 3, and therefore Applicants' amended independent claim 3 is patentable and allowable over the Beaman Patent and the Bonnefoy Patent. Dependent claims 4, 7, and 10 are believed to be allowable as they further define patentably distinct independent claim 3.

Dependent claim 13 is believed to be allowable, as it further defines patentably distinct independent claim 11.

Applicants amended independent claim 16 claims a method of distributing a contact force between a land grid array module and a printed circuit board.

As admitted in the Office Action (regarding claims 3 and 16), the Beaman Patent fails to disclose a spring member being curved and in pressing contact against the second side of the printed circuit board adjacent a center of the printed circuit board.

In addition, the Beaman Patent fails to disclose a first portion of the spring member being in secured contact with the backing plate and spaced from the second side of the printed circuit board in an assembled state of the land grid array module, the printed circuit board, and the spring member, as recited in Applicant's amended independent claim 16.

The Bonnefoy Patent fails to cure these deficiencies of the Beaman Patent regarding Applicants amended independent claim 16. The Bonnefoy Patent discloses clip 22 and clip 23 which are in a cambered form prior to formation of the clamped state shown in Figure 3 (see the Bonnefoy Patent at Figures 4-5, and Column 4, lines 8-62). As shown in Figure 3, in the clamped state, substantially all, or all, of the clip 22 is in contact against element 29 and/or substantially all or all of clip 23 is in contact against element 20. Accordingly, the

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Bonnefoy Patent does not disclose a first portion of a spring member in secured contact with a backing plate and the first portion of the spring member spaced from the printed circuit board in an assembled state of the land grid array module, the printed circuit board, and the spring member, and wherein a second portion of the spring member is biased in unsecured, pressing direct contact against the second side of the printed circuit board, as recited in Applicant's amended independent claim 16.

Accordingly, one cannot combine the Beaman Patent and the Bonnefoy Patent and arrive at Applicants amended independent claim 16.

Indeed, the Bonnefoy Patent fails to disclose a backing plate at all. The Bonnefoy Patent also fails to indicate how one would employ the clip 22, 23 in cooperation with a backing plate. Moreover, the Beaman Patent fails to disclose a suggestion or motivation to modify its assembly to include a spring member.

For these reasons, the Beaman Patent and the Bonnefoy Patent, alone or in combination, fail to teach or suggest Applicants' amended independent claim 16, and therefore Applicants' amended independent claim 16 is patentable and allowable over the Beaman Patent and the Bonnefoy Patent. Dependent claim 19 is also believed to be allowable as it further defines patentably distinct independent claim 16.

In the Office Action, claim 15 was rejected under 35 U.S.C. 103(a) as being unpatentable over the Beaman Patent in view of Haselby et al. U.S. Patent 6,299,460 (herein the Haselby Patent).

Dependent claim 15 is believed to be allowable because claim 15 further defines patentably distinct independent claim 11, which is patentable and allowable for the reasons previously presented.

In the Office Action, claims 5-6, and 14 were rejected under 35 U.S.C. 103(a) as being unpatentable over the Beaman Patent in view of the Bonnefoy Patent, and further in view of Sinha et al. U.S. Patent 6,475,011 (herein the Sinha Patent).

Dependent claims 5-6 are believed to be allowable because they define patentably distinct independent claim 3, which is patentable and allowable for the reasons previously presented.

Dependent claim 14 is believed to be allowable because claim 14 further defines patentably distinct independent claim 11, which is patentable and allowable for the reasons previously presented.

In the Office Action, claim 17 was rejected under 35 U.S.C. 103(a) as being unpatentable over the Beaman Patent in view of the Bonnefoy Patent, and further in view of the Haselby Patent.

Dependent claim 17 is believed to be allowable because claim 17 further defines patentably distinct independent claim 16, which is patentable and allowable for the reasons previously presented.

In light of the above, Applicants respectfully request withdrawal of the above rejections of claims 3-7, 10, 13-17, and 19 under 35 U.S.C. §103 and respectfully request allowance of these claims.

#### **Allowable Subject Matter**

In the Office Action, claims 8-9, and 18 were objected to as being dependent upon a rejected base claim, but indicated to be allowable if rewritten in independent form including all limitations of the base claim and any intervening claims and if rewritten to overcome the 35 U.S.C. §112 rejections.

Accordingly, Applicants have presented new independent claims 20-22. New independent claim 20 corresponds to claim 8 as rewritten to include the limitations of previous base claim 3. New claim 21 depends from claim 20 and corresponds to claim 9. New independent claim 22 corresponds to claim 18 as rewritten to include the limitations of previous base claim 16.

Applicant respectfully requests allowance of claims 20-22.

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**CONCLUSION**

In view of the above, Applicant respectfully submits that pending claims 3-22 are in form for allowance and are not taught or suggested by the cited references. Therefore, reconsideration and withdrawal of the rejections and allowance of claims 3-22 is respectfully requested.

Applicants hereby authorize the Commissioner for Patents to charge Deposit Account No. 08-2025 the amount of \$400.00 to cover fees as set forth under 37 C.F.R. 1.16(h)(i).

The Examiner is invited to contact the Applicant's representative at the below-listed telephone numbers to facilitate prosecution of this application.

Any inquiry regarding this Amendment and Response should be directed to either David A. Plettner at Telephone No. (408) 447-3013, Facsimile No. (408) 447-0854 or Paul S. Grunzweig at Telephone No. (612) 767-2504, Facsimile No. (612) 573-2005. In addition, all correspondence should continue to be directed to the following address:

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Respectfully submitted,  
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Date: March 21, 2006  
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Paul S. Grunzweig  
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**CERTIFICATE UNDER 37 C.F.R. 1.8:** The undersigned hereby certifies that this paper or papers, as described herein, are being deposited in the United States Postal Service, as first class mail, in an envelope address to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on this 21st day of March, 2006.

By Paul S. Grunzweig  
Name: Paul S. Grunzweig